



## TITAN T4 Level 2 Training Course Syllabus

Technical  
Training  
Department

### Course covers the following:

This course is a follow-up to the TITAN T4 Level 1 Training Course. This course is intended to build on the basic skills learned in the previous Course, and provide additional theory of operation, advance troubleshooting, and corrective maintenance that will prepare the pilot/tech to use the manipulator in a safe and skillful manner.

### Course does not cover the following:

Strip down of rotary actuators  
Strip down of wrist assembly

**Audience** – ROV Pilot/Tech

**Prerequisite** – T4 Level 1 Training Course or Equivalent Industry Experience

**Length** – 3 Days.

### Course Objectives

Upon completion student will be able to:

- Correctly mount and orientate the TITAN 4 manipulator
- Configure telemetry to RS-485 or RS-232
- Know the telemetry LED status
- Know how to fill and bleed the compensation system
- Know the function of the compensator and how to safely replace diaphragm
- Introduction to each slave arm joint
- Introduction to main slave arm components
- Describe all operating menus and modes of operation
- Understand all diagnostic menus and error checking systems
- Safely enable and disable the operating system
- Set system operating limits
- Teach a stow path
- Set servo offsets and describe this feature
- Perform routine maintenance on manipulator
- Interpret the hydraulic schematic
- Understand the flow of oil within the slave arm
- Describe the theory of operation of servos and resolvers
- Describe closed-loop system operation
- Describe the operation of slave controller PCB
- Describe the master processor
- Disassemble/reassemble the master console
- Isolate errors between the master and slave
- Troubleshoot servos and resolvers
- Replace actuators and slip rings
- Understand internal operation of rotary actuators